What is broadband?

Broadband refers to communications channels capable of transmitting greatly more amounts of voice and data information than a standard voice-grade channel. Information can be sent on many different frequencies within the band, concurrently, allowing more information to be transmitted in a given amount of time (much as more lanes on a highway allow more cars to travel on it at the same time).

How fast is broadband?

There is no industry or technically agreed upon definition of the connection speeds, or transfer rates, that constitute broadband. However, in the U.S. broadband most commonly refers to two-way connections from 384 kilobits per second (kbps) and up.

The FCC defines broadband connections as those connections that enable the end user to receive information from and/or send information to the Internet at information transfer rates exceeding 200 kbps in at least one direction.

How does broadband differ from dial-up?

Broadband is typically 10-20 times faster than the traditional dial-up-modem. A typical broadband connection operates at between 384 kbps to 10 mbps as compared to 28.8kbps to 56kbps for dial-up.

The traditional dial-up modem is used to connect your computer to the Internet when it has something to send, such as email or a request to load a web page. Once there is no further data, or the modem idle time is reached (set by the computer user), the call is disconnected. Sometimes dial-up modems are referred to as ‘dial-on-demand’ services

A further advantage of broadband is that unlike dial-up the computer can always be on and connected to the Internet. Also, the telephone line is not tied up while the Internet is being used.

Who provides broadband?

Local Phone Company, are Wireline telecommunications carriers that own the telephone network within a geographic area. They offer local telephone service, local toll, long distance, international, Internet access and are now allowed to offer video services.

Competitive Local Phone Company, are wireline carriers that are authorized under California Public Utilities Commission (CPUC) and Federal Communications Commission (FCC) rules to compete with local companies to provide local telephone services. They often package their local service offerings with local toll, long distance, international, Internet access, cable and/or video services.

Competitive Companies provide telephone services in one of three ways, or a combination thereof:

(a) Building network facilities needed to connect themselves to customers premises;
(b) Purchasing telecommunications services from another carrier (typically a local phone company) at wholesale rates and reselling those services to their own customers at retail rates;
(c) and leasing parts of the local phone company network.

Satellite providers deploy broadband service to customers in almost any part of the United States. Customers must install a satellite dish with a clear line-of-sight view of the southern sky to receive satellite services. It is a popular choice for customers in rural and other areas that lack an existing broadband infrastructure.

Wireless carriers provide broadband service using fixed or mobile wireless technology. Fixed wireless technology offers services to large geographic areas with a modest investment. It is a particularly attractive form of broadband in rural areas, smaller towns, and suburbs.

Cable companies provide broadband services over their coaxial cable networks. Cable providers are generally granted exclusive franchises by the jurisdictions in which they operate. Cable broadband providers serve primarily residential customers, since many homes across the nation already subscribe to cable video.

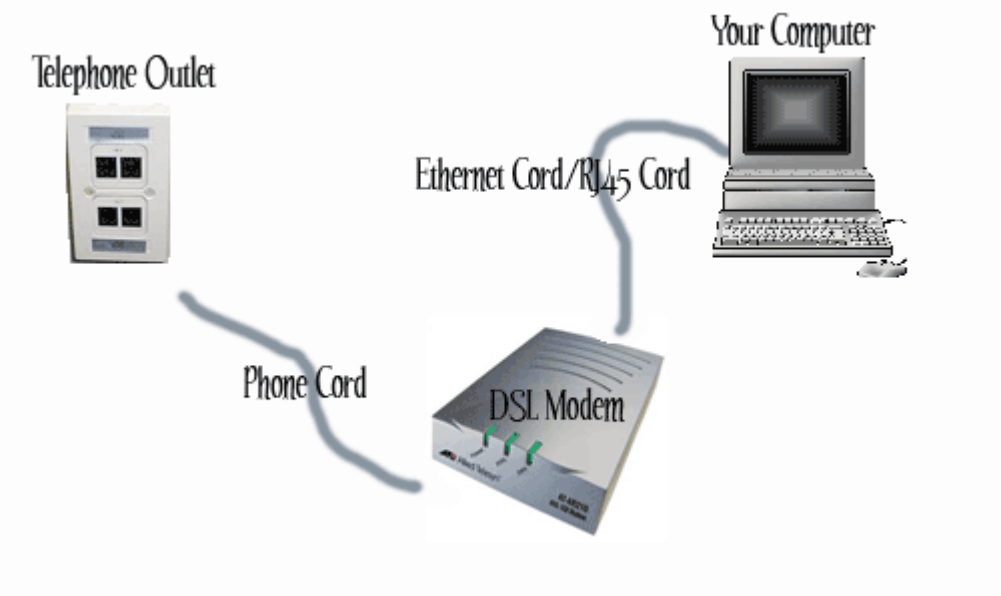
Municipal, some communities without commercial broadband providers have opted to build their own networks using public funds, or by establishing public-private partnerships.

Internet Service Provider (ISP), a company that provides third-party access to the Internet. An ISP has the equipment and the telecommunication line access required to have a point-of-presence on the Internet for the geographic area served. Examples are AOL, MSN, and Earthlink.

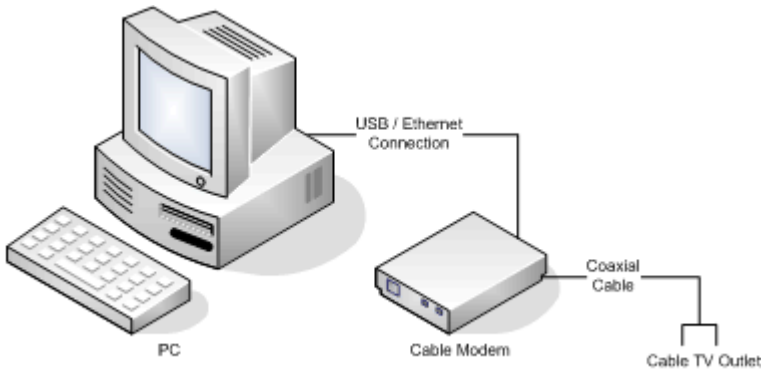
What technologies supply residential broadband?

Current residential offering in California…

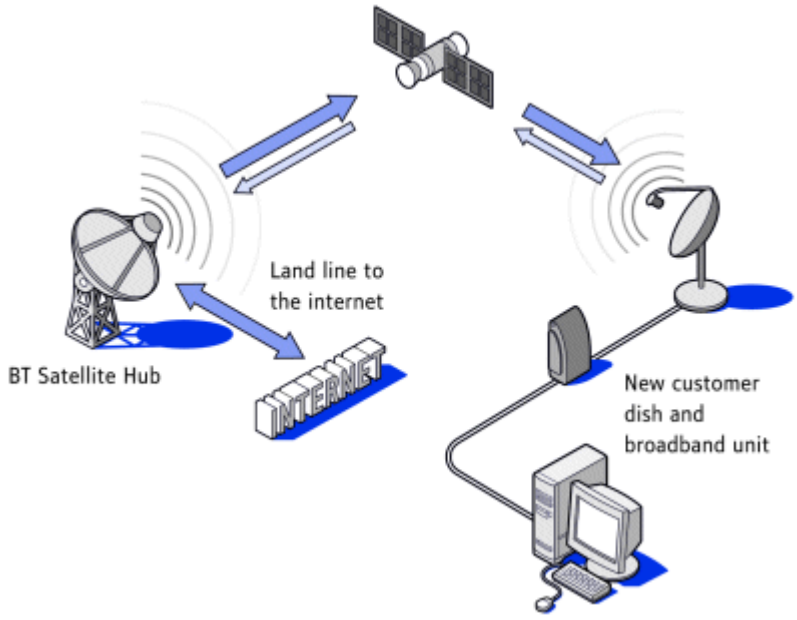
DSL operates on the traditional wireline network, utilizing the higher frequency spectrum available in a pair of copper telephone wires which is unused by analog telephone services. DSL's availability is dependent on a consumer's distance from the telephone company's central office.



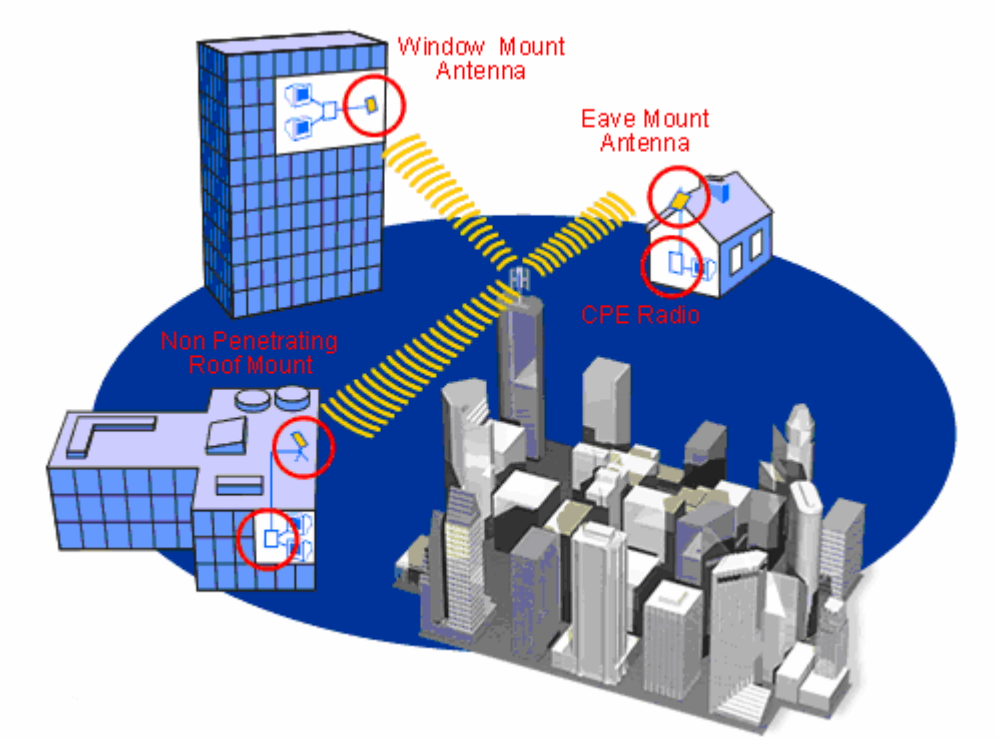
Cable broadband service uses the same coaxial cable used for cable television service. Internet service via coaxial cable became available with the cable television industry's migration from analog to digital TV.



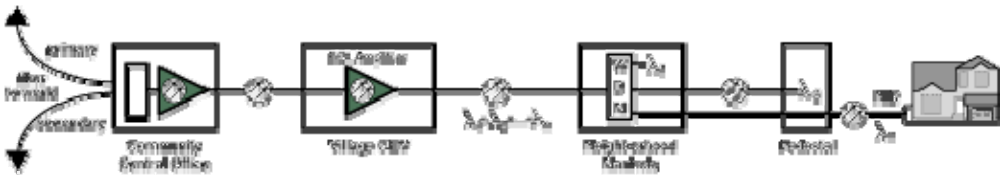
Satellite broadband services utilize geo-synchronized satellites that stay in a fixed point in the southern sky to receive and transmit data to and from satellite broadband customers who must install a satellite dish. The primary advantage of satellite broadband technology is that it is available to customers located anywhere in the U.S. with a direct view of the southern sky.



Wireless broadband technology is somewhat similar to cellular technology in that it uses radio waves to transmit and receive data across the air waves without having to rely on a physical connection. Simply put, wireless broadband refers to the spreading of an electromagnetic wave through empty space by an antenna which is connected to a base station.

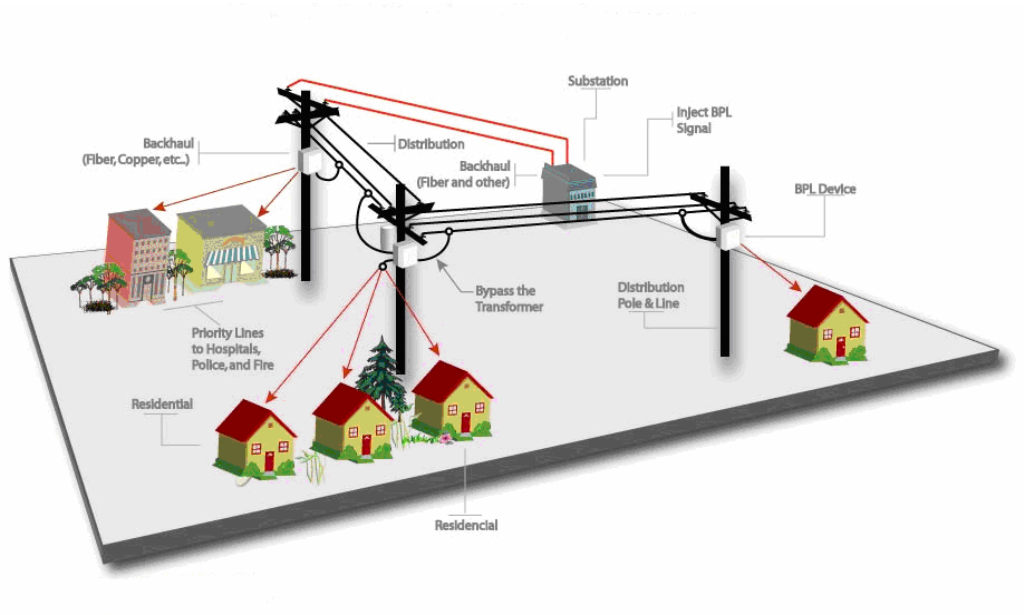


Fiber to the Premises (FTTP) systems involve the installation of optical fiber directly into homes. FTTP takes advantage of the extensive fiber backbone network that local phone companies have built out over the years and further extends it into customers' homes and businesses.

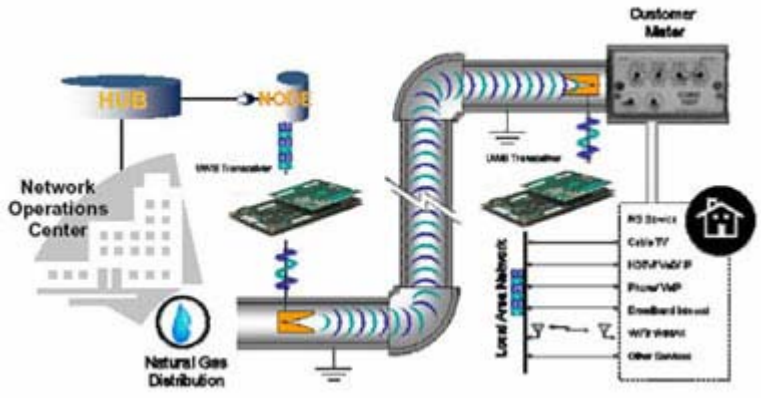


What technologies may supply broadband in the future?

Broadband over Powerline (BPL) is the provision of broadband service over existing electricity distribution wires using the higher frequency bandwidth of those wires.



Broadband in Gas Line, uses technology that encodes the broadband signals using ultra wideband and beams the signals through the pipeline, and then at the gas meter, the signal is offloaded to on-the-premise wireline or wireless networks.



How fast are the various broadband technologies?

Satellite: download speeds from 512kbps to 1.5 Mbps and upload speeds of 128kbps to 256Kbps.

Cable: download speeds from 1.5 mbps to 20mbps and upload speeds of 384kbps to 2mbps.

DSL: download speeds from 384kbps to 6mbps and upload speeds of 128kbps to 768kbps.

FTTH: download speeds from 5-30 mbps and upload speeds of 2mbps to 5 mbps.

Wireless: download speeds from 400kbps to 2mbps and upload speeds of 300 to 400kbps. *mobile wireless

BPL: a retail offering is not available in California at the time of writing.

Gas line: download and upload speeds are unknown as this technology is in testing phase.

What special benefits and services are available with broadband?

A few of the many benefits and services…

Voice over Internet Protocol (VOIP) allows high quality two-way voice transmission over broadband connections

Internet Protocol Television (IPTV) delivers television programming to households via a broadband connection using Internet protocols.

Telemedicine is the application of electronic communication technologies to the provision of healthcare, health education and health services. Telemedicine applications can use broadband to transmit detailed medical images, as well as for videoconferencing to connect healthcare clinics in remote rural locations with experts and specialists located primarily in urban centers

Disabled Community, Broadband services are particularly beneficial to the disabled community. For example, video phones with closed caption technology can greatly increase the ability to communicate for those within the deaf community.

How much does broadband cost?

Satellite: $50-80 month, plus $300-400 one time equipment cost, $0-200 installation

DSL: $15-80 month, plus $0-70 one time equipment cost, $0-200 installation

Cable: $30-90 month, plus $0-50 one time equipment cost, $0-200 installation

FTTH: $40-200 month, no additional equipment cost, $0-75 installation cost

Wireless: $60-80 month, plus $0-150 equipment cost, $20-40 activation fee, *mobile wireless

Dial-up: $10-25 month, no additional equipment cost or installation cost, *not broadband

Where is broadband available?

The CPUC recently published maps roughly indicating where broadband is available by zip code in California. The maps are included in the Broadband Report published September 20, 2006 and can be viewed by accessing the following link, http://www.cpuc.ca.gov/static/telco/reports/california+broadband+report+for+sept+2006+cetf+meeting.pdf

Further efforts are underway at the CPUC to develop an interactive broadband provider searchable database.

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Links

CPUC broadband reports: http://www.cpuc.ca.gov/static/telco/reports/broadbandreports.htm